

What is claimed is:

1. A surface treatment apparatus comprising:
 - a sheet heating unit which heats a sheet;
 - a sheet cooling unit which cools the sheet while in contact with a contact member; and
 - a depression-and-protrusion shape control unit which forms depression-and-protrusion shapes by differently treating different parts of the surface of the sheet by at least one of the sheet heating unit and the sheet cooling unit.
2. A surface treatment apparatus according to Claim 1, wherein the sheet heating unit heats the sheet in contact with the contact member.
3. A surface treatment apparatus according to Claim 1, wherein the sheet comprises at least a thermoplastic resin layer formed with a thermoplastic resin, wherein the thermoplastic resin in the thermoplastic resin layer is a polyolefin resin.
4. A surface treatment apparatus according to Claim 3, wherein the sheet heating unit heats the sheet to a temperature equal to or higher than the softening point of the thermoplastic resin in the thermoplastic resin layer.

5. A surface treatment apparatus according to Claim 3, wherein the sheet cooling unit cools the sheet to a temperature less than the softening point of the thermoplastic resin in the thermoplastic resin layer.
6. A surface treatment apparatus according to Claim 1, wherein the sheet comprises a base, and a thermoplastic resin layer and an image-forming layer above the base, and
the depression-and-protrusion shape control unit forms depression-and-protrusion shapes on the image-forming layer surface and the interface of the thermoplastic resin layer on the image-forming layer side.
7. A surface treatment apparatus according to Claim 1, wherein the contact member has different qualities in at least one part.
8. A surface treatment apparatus according to Claim 7, wherein the qualities are at least one of surface qualities and heat conducting properties.
9. A surface treatment apparatus according to Claim 1, wherein the contact member is an endless belt.
10. A surface treatment apparatus according to Claim 9, wherein the sheet heating unit comprises the endless belt, and a pair of heat

rollers disposed in pressure contact from the inner side and outer side of the endless belt.

11. A surface treatment apparatus according to Claim 1, wherein the sheet heating unit supplies a different heat amount in at least one part of the sheet.

12. A surface treatment apparatus according to Claim 11, wherein the sheet heating unit comprises a thermal head.

13. A surface treatment apparatus according to Claim 12, wherein the thermal head comprises plural heating elements disposed vertically and horizontally within a predetermined area.

14. A surface treatment apparatus according to Claim 1, further comprising:

a positioning unit which performs positioning of the sheet and the contact member.

15. A surface treatment apparatus according to Claim 1, wherein the sheet is selected from a thermosensitive recording sheet, an inkjet sheet, an electrophotographic sheet, a hot developing sheet, a silver halide photography sheet, and a silver halide digital photography sheet.

16. A surface treatment apparatus according to Claim 1, further comprising:

a preheating unit which preheats the sheet prior to heating by the sheet heating unit.

17. An image-forming apparatus comprising:

an image-forming device which forms an image on a sheet;

and

a surface treatment unit which performs surface treatment of the sheet on which the image is formed,

wherein the image-forming device comprising:

a sheet heating unit which heats the sheet;

a sheet cooling unit which cools the sheet in contact with a contact member; and

a depression-and-protrusion shape control unit which forms depression-and-protrusion shapes by differently treating different parts of the surface of the sheet by at least one of the sheet heating unit and the sheet cooling unit.

18. An image-forming apparatus according to Claim 17, wherein the sheet comprises a thermoplastic resin layer formed with a thermoplastic resin, wherein the thermoplastic resin in the thermoplastic resin layer is a polyolefin resin.

19. An image-forming apparatus according to Claim 18, wherein

the sheet heating unit heats to a temperature equal to or higher than the softening point of the thermoplastic resin in the thermoplastic resin layer.

20. An image-forming apparatus according to Claim 18, wherein the sheet cooling unit cools to a temperature less than the softening point of the thermoplastic resin in the thermoplastic resin layer.

21. An image-forming apparatus according to Claim 17, wherein the sheet comprises a base, and a thermoplastic resin layer and an image-forming layer on the base, and

the depression-and-protrusion shape control unit forms depression-and-protrusion shapes on the image-forming layer surface and the interface of the thermoplastic resin layer on the image-forming layer side.

22. An image-forming apparatus according to Claim 17, wherein the contact member has different qualities in at least one part.

23. An image-forming apparatus according to Claim 22, wherein the qualities are at least one of surface qualities and heat conducting properties.

24. An image-forming apparatus according to Claim 17, wherein the contact member is an endless belt.

25. An image-forming apparatus according to Claim 24, wherein the sheet heating unit comprises the endless belt, and a pair of heat rollers disposed in pressure contact from the inner side and outer side of the endless belt.

26. An image-forming apparatus according to Claim 17, wherein the sheet heating unit supplies a different heat amount in at least one part of the sheet.

27. An image-forming apparatus according to Claim 26, wherein the sheet heating unit comprises a thermal head.

28. An image-forming apparatus according to Claim 27, wherein the thermal head comprises plural heating elements disposed vertically and horizontally within a predetermined area.

29. An image-forming apparatus according to Claim 17, further comprising:

a positioning unit which performs positioning of the sheet and the contact member.

30. An image-forming apparatus according to Claim 17, further comprising:

a preheating unit which preheats the sheet prior to heating by the sheet heating unit.